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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,674	12/28/2001	Guy L. Steele JR.	06502.0377	4634
22852	7590	05/05/2005	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			DO, CHAT C	
			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/035,674

Applicant(s)

STEELE, GUY L.

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/4;11/23;12/23/4</u>  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

1. This communication is responsive to Amendment filed 02/02/2005.
2. Claims 1-21 are pending in this application. Claims 1, 8, and 16 are independent claims.

This Office action is made final.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5-8, 13-16, and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Deerfield (U.S. 3,725,649).

Re claim 1, Deerfield discloses in Figure 2 a method for providing a floating point product (e.g. title and abstract) comprising: multiplying a sub-precise operand (e.g. output of 28 and col. 4 lines 50-58) and a non-sub-precise operand (e.g. output of 22) using a plurality of intermediate stages (e.g. 30, 34, 24 wherein each of these considers to be a stage); and correcting an error introduced (e.g. right shift 34, 28 and increment in exponent in 24; col. 4 lines 20-33) by the sub-precise operand by performing an operation in conjunction (e.g. in substantially parallel with producing product) with a one of the plurality of intermediate stages utilizing a compensating summand (e.g. output of adder 32).

Re claim 5, Deerfield further discloses in Figure 2 the sub-precise operand is represented using a delimited normalized format with an implicit leading 1-bit (e.g. conventional normalized format as col. 1 lines 28-37).

Re claim 6, Deerfield further discloses in Figure 2 the one of the plurality of intermediate stages is selected wherein a substantial time delay to correct the error is avoided (e.g. col. 2 lines 20-32 as motivation).

Re claim 7, Deerfield further discloses in Figure 2 time consumed by multiplying the sub-precise operand and the non-sub-precise operand overlaps time consumed in correcting the error (e.g. accumulating partial products in 30, 32, and 34 is done substantially parallel with right shift control as output of 36 and exponent correction in 24).

Re claim 8, it is a system claim of claim 1. Thus, claim 8 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 13, it is a system claim of claim 5. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 5.

Re claim 14, it is a system claim of claim 6. Thus, claim 14 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 15, it is a system claim of claim 7. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Re claim 16, it is a computer-readable medium claim of claim 1. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 19, it is a computer-readable medium claim of claim 5. Thus, claim 19 is also rejected under the same rationale as cited in the rejection of rejected claim 5.

Re claim 20, it is a computer-readable medium claim of claim 6. Thus, claim 20 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 21, it is a computer-readable medium claim of claim 7. Thus, claim 21 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 9-10 are rejected under 35 U.S.C. 103(a) as being obvious over Deerfield (U.S. 3,725,649) in view of Yeh et al. (U.S. 4,991,131).

Re claims 2 and 10, Deerfield do not disclose in Figure 2 multiplying the sub-precise operand and the non-sub-precise operand using a multiplier array comprising 3-to-2 adders. However, Yeh et al. disclose in Figures 3 and 16A a multiplier (46) for multiplying operands (M(X) and M(Y)) using a 3-2 adders array (full adder in Figure 16A). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add an array multiplier comprising 3-2 adders as seen in Yeh et al.'s invention into Deerfield's invention because it would enable to reduce the circuitry and efficiently carry the multiplication.

Re claim 9, it is a system claim of claim 2. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

*Allowable Subject Matter*

7. Claims 3-4, 11-12, and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

8. Applicant's arguments filed 02/02/2005 have been fully considered but they are not persuasive.

a. The applicant argues in page 5 for claims 1, 8, and 16 that the cited reference by Deerfield does not disclose a multiplying a subprecise operand and a non-subprecise operand instead the cited reference discloses a multiplication of two un-normalized digital numbers.

Based on the defined terms "subprecise" and "non-subprecise" operand as "non-full significant bits operand" and "full significant bits operand" respectively by the applicant in page 4 of the response argument, he examiner respectfully submits that cited reference clearly disclose the features or limitations in the claimed invention. First, the examiner interprets the normalized and un-normalized operands as equivalent (and precise) as the subprecise and non-subprecise operands because the significant bits in un-normalized are less than the

normalized operands and wherein the normalized operand has a full width significant bits in mantissa. Second, the cited reference clearly discloses a multiplication of a normalized and un-normalized operands wherein the normalized operand is the output of 28 (e.g. see col. 4 lines 50-58) and the un-normalized operand is the output of 22. The input multiplicand 28 originally is un-normalized operand, but it is shifted left by a control signal (e.g. Figure left shift control) prior entering the digital multiplier (e.g. 30). Therefore, Deerfield clearly discloses a multiplication in Figure 2 of a subprecise or normalized operand and a non-subprecise or un-normalized operand as cited in the claimed invention.

### *Conclusion*

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

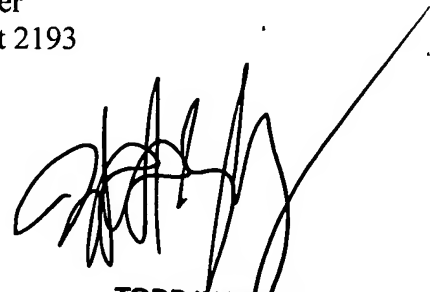
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on 7:00AM to 5:00PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C Do  
Examiner  
Art Unit 2193

April 19, 2005



TODD INGBERG  
PRIMARY EXAMINER